

SECTION 6.0 COMMENTS AND RESPONSES TO THE CES MPDES PERMIT

The Montana DEQ received comments on the Montana Pollutant Discharge Elimination System (MPDES) permit to Continental Energy Services (CES) for wastewater discharge from the proposed Silver Bow generation project power plant operations. This permitting action is required under the Montana Water Quality Act 75-5-101 *et seq.*, Montana Code Annotated (MCA), and the Administrative Rules of Montana (ARM) 17.30.1301 *et seq.*

The DEQ received comments on the draft permit from the following four sources:

- Terry L. Cummings, Safety and Environmental Manager
Advanced Silicon Materials, LLC
- Terry Webster, Director of Environmental Compliance
Continental Energy Services
- Matt Clifford, Conservation Director, Staff Counsel
Clark Fork Coalition
- Gwen Jacobs, Environmental Specialist
U.S. Environmental Protection Agency (EPA)

These following MPDES permit comments and responses are grouped by comment source.

RESPONSE TO ASIMI COMMENTS

Comment 1 – Section I.D.1. In Table 4, Effluent Monitoring Requirements for Outfalls 001 and 002, the requirement for weekly metals monitoring is excessive, placing an unnecessary burden and cost on the applicant without adding value. In addition the draft MPDES permit requires that a composite sample be collected. In review of Figure 2-7, 'Conceptual diagram of the generation plant water balance, on page 2-23 of the Draft EIS, the water balance shows that 90+ percent of the water discharge is cooling tower blow down, with the remainder from only floor drains and a small demineralizer mixed bed regeneration stream. This indicates that the overall wastewater stream will be very consistent, which does not warrant either a high sample frequency or composite sample collection. Quarterly metals monitoring with a 'grab' sample collection should be appropriate.

Response 1 - The monitoring frequencies for discharges to surface water in the permit are consistent with other major industrial dischargers in the region and are considered a minimum based on the characteristics of the effluent. Therefore, the weekly monitoring frequency for total recoverable metals (for both Outfalls 001 and 002) will not be modified.

Based on comments from Continental Energy Services (CES) the Department will modify the monitoring requirements in Table 4 for Outfall 001 by removing the monitoring requirements for metals that do not have an effluent limit at Outfall 001. Using that criteria, barium, cadmium, iron, manganese and strontium will be removed from the monitoring requirements at Outfall 001.

With regard to the monitoring frequencies for discharges to ground water (i.e. the dissolved metals analyses required for Outfall 002), the Department will reduce the monitoring frequency for dissolved metals to quarterly except for aluminum (which has dissolved standards in surface water) and arsenic. A quarterly monitoring frequency is more consistent with other ground water monitoring requirements. The monitoring frequency for dissolved arsenic will remain as monthly due to the uncertainty regarding existing background ground water arsenic concentrations. The more frequent effluent monitoring for dissolved arsenic will be conducted at the same frequency required for the ground water beneath Outfall 002, and will be useful in demonstrating compliance with the arsenic nondegradation requirements.

The Department believes the composite monitoring requirements are necessary because the discharge will contain wastewater from other sources that will not be consistent wastewater sources. The permit application indicates that approximately 15% of the discharge water will consist of wastewater used for plant/equipment drains and reject water from the reverse osmosis system. Therefore, the permit will maintain its requirement for composite samples.

Comment 2 – Section I.D.2 (CRK-A). This section requires in-stream monitoring of Silver Bow Creek upstream of the Sheep Gulch influent to provide data for mixing zone calculations. Silver Bow Creek has already been thoroughly characterized as a result of the Superfund activities in the area, and as stated in the permit Fact Sheet, Silver Bow Creek water quality has been consistent since 1998. Based on this existing data the Department has already performed mixing zone calculations for most parameters to verify that water quality standards will be met. Eliminating the requirement to do in-stream monitoring at CRK-A is appropriate. As an alternative (only if the Department will not consider the previous recommendation) the in-stream monitoring requirements identified in Table 6 of this section could be required for no more than 1 year to verify baseline water quality.

Response 2 - The Department believes that the in-stream monitoring point at CRK-A is necessary and will remain in the permit. There has been and will continue to be reclamation activities upstream of the Outfall 001. Therefore, CRK-A is necessary to monitor the potential changes in water quality in the future. Maintaining accurate and current information in Silver Bow Creek is particularly important because the stream quality may change as reclamation activities continue, which may eventually lead to reclassification of the Creek (it is the Department's goal to improve the quality of Silver Bow Creek to the point where reclassification is possible). If Silver Bow Creek is reclassified in the future, a modification to the permit limits would likely be necessary. In addition, some of the effluent limits for Outfall 001 are based on in-stream concentrations, therefore it is important to monitor in-stream quality directly above the discharge point to maintain the correct effluent limits in the future.

Limiting monitoring at CRK-A to a one year period would not be sufficient to monitor potential changes of water quality in Silver Bow Creek in the future.

Comment 3 – Section I.D.2 (CRK-B). This section requires in-stream monitoring of Sheep Gulch upstream of the confluence of Sheep Gulch and the West Fork Sheep Gulch. Sheep Gulch and the West Fork Sheep Gulch are both ephemeral drainages. The numeric standards in WQB-7 do not apply to ephemeral streams and thus the applicant should not be required to monitor for these parameters at CRK-B.

Response 3 – As the fact sheet stated, and the comment notes, the WQB-7 water quality standards do not apply in the ephemeral section of Sheep Gulch. However, those standards do apply when the effluent from Outfall 002 discharges into the perennial section of Sheep Gulch, which is a B-1 surface water (Sheep Gulch is perennial below the confluence with the West Fork Sheep Gulch due to the discharge from ASiMI). Monitoring at CRK-B is necessary to determine if the water quality standards are met prior to discharge into the B-1 section of Sheep Gulch. Therefore, monitoring requirements at CRK-B will not be removed from the permit.

Comment 4 – Section I.D.3 (CESMW-1, CESMW-2, CESMW-3). The frequency of groundwater monitoring requirements is specified as monthly. This places a significant burden and cost on the applicant without adding value. Groundwater typically moves slowly and changes occur slowly over time. Considering that the mixing zone is specified at 6000 feet, water from the CES discharge will not likely reach that point (CESMW-3) for years. Semi-annual monitoring will provide the needed data to assess potential water discharge impacts.

Response 4 – The Department agrees that the monthly monitoring frequency is too frequent, and will modify the permit to require quarterly monitoring for all parameters (except arsenic) in the ground water monitoring requirements for Outfall 002 (Table 8). The arsenic monitoring frequency will remain as monthly due to the uncertainty regarding the existing background concentration in the ground water beneath Outfall 002. The more frequent ground water monitoring will be useful in demonstrating compliance with the arsenic nondegradation requirements.

In addition, based on comments from CES, the ground water mixing zone for Outfall 002 has been shortened from 6,000 feet to 3,000 feet. Due to that change, the permit will be modified to remove CESMW-3 as a downgradient monitoring well for Outfall 002. The final permit will include two monitoring wells for Outfall 002, CESMW-1 and CESMW-2. The location of CESMW-2 will be modified in the permit, it will be located at the end of the ground water mixing zone.

Comment 5 – Section H.3. (Fact Sheet). This section makes the statements: “Currently the MPDES permit monitoring requirements for GW-3 include fewer parameters and a lower monitoring frequency than for CESMW-2 and CESMW-3. When the ASiMI permit is renewed (scheduled for 2002), the monitoring requirements will be modified to be consistent with the CES permit, which will allow determination of which discharge may be causing impacts in the ground water at the end of the outfall 002 mixing zone.” I believe that these statements should be stricken from the Fact Sheet in that they constitute a predetermination of the ASiMI permit requirements. ASiMI has been monitoring GW-3 quarterly for 3 years without any indication of adverse impacts from the ASiMI water discharge. Based on this, ASiMI anticipates requesting a reduction in monitoring frequency when the ASiMI MPDES permit is scheduled for renewal in December 2004.

Response 5 – Because of the modifications to the ground water mixing zone for Outfall 002 (see response to previous comment), ground water monitoring requirements at CESMW-3 for Outfall 002 will be removed from the permit. Therefore, the language cited in this comment will be removed from the fact sheet. ASiMI ground water monitoring requirements may still be modified, but that will be determined when the ASiMI MPDES permit is renewed. The ASiMI permit expires on December 31, 2004 (the section of the fact sheet that will be removed incorrectly stated that the ASiMI permit expires in 2002).

Comment 1 – Page 6, C1, Table 1, Outfall 001, Numeric Effluent Limits - The Continental cooling tower will cycle water approximately 4.5 times more than the ASiMI facility but the data from that facility and from samples artificially concentrated by Continental, in most cases, do not suggest a linear relationship of effluent to influent parameter concentrations. Continental used a linear formula in their anticipated discharge concentrations. Most of these linear relationships were based on concentrations that were less than detection in the raw water. The DEQ then used a multiplying factor, which further exaggerated the potential concentration of parameters in the effluent. Continental believes that the state, based on best professional judgement, should not limit the parameters that do not show a tendency to concentrate or are non-detectable in the ASiMI discharge (antimony, lead, nickel, selenium, and silver). Additionally a number of parameters, which have not been sampled in the ASiMI discharge, should not have limits. These parameters which have been sampled by Continental in the raw water and not detected and were also not detected in a sample concentrated 10-fold should not be subject to permit limits (beryllium, mercury, and thallium).

Antimony has never been detected in the ASiMI discharge (highest reporting value <0.003 mg/L, lowest value <0.0001 mg/L). Antimony was not detected at <0.0001mg/L (dissolved) concentration in a sample of Silver Lake water collected by Continental in November of 2001. A 10-fold concentration of this sample did detect antimony at a concentration of 0.001 mg/L. This data indicates that antimony may be present but even in a concentrated sample it is below the required reporting value (RRV) of 0.003 mg/L and below the standard of 0.006 mg/L. Antimony should not be limited in the permit.

Beryllium has not been sampled for in the ASiMI discharge. Beryllium was not detected at <0.0001mg/L (dissolved) concentration in a sample of Silver Lake water collected by Continental in November of 2001. A 10-fold concentration of this sample did not detect beryllium at a total concentration of <0.001 mg/L. Given that the required reporting value (RRV) is 0.001 mg/L, beryllium should not be limited in the permit.

Lead has been detected once in the ASiMI discharge at a concentration of 0.0001mg/L. This sample was collected at a time (June of 1998) when the TDS concentration averaged 2,405. ASiMI experienced high 30-day average TDS concentrations in May through July of 1998 when they increased the flow through the facility to flush BOD, which they believed was residual from oils in the cooling system piping and silicon reactors. The detection of lead at that time may also be caused by residual oils. Lead was not detected at <0.0001mg/L (dissolved) concentration in a sample of Silver Lake water collected by Continental in November of 2001. A 10-fold concentration of this sample did detect lead at a concentration of 0.001 mg/L. This data indicates that lead may be present but even in a concentrated sample it is below the required reporting value (RRV) of 0.003 mg/L and below the standard of 0.015 mg/L. Lead should not be limited in the permit.

Mercury has not been sampled for in the ASiMI discharge. Mercury was not detected at <0.0001mg/L (dissolved) concentration in a sample of Silver Lake water collected by Continental in November of 2001. A 10-fold concentration of this sample did not detect mercury at a total concentration of <0.001 mg/L. Mercury should not be limited in the permit.

Nickel has been detected once in the ASiMI discharge at a concentration of 0.0007 mg/L. This sample was collected at a time (03/31/98) when the TDS concentration averaged 2,405 mg/L. More recently nickel has been detected four times in the ASiMI discharge ranging from 0.006 mg/L to 0.011 mg/L. Nickel was not detected at <0.0001mg/L (dissolved) concentration in a sample of Silver Lake water collected by Continental in November of 2001. A 10-fold concentration of this sample did detect nickel at a concentration of 0.003 mg/L. This value as those detected by ASiMI are less than the required reporting value (RRV) of 0.02 mg/L and less than the standard for nickel is 0.079 mg/L. Nickel should not be limited in the permit.

Selenium has been detected twice in the ASiMI discharge at values of 0.001 and 0.002 mg/L. At a time (03/31/98) when the TDS concentration averaged 2,405 mg/L selenium was not detected at a concentration of <0.001 mg/L. Selenium was not detected at <0.0006 mg/L (dissolved) concentration in a sample of Silver Lake water collected by Continental in November of 2001. A 10-fold concentration of this sample did detect selenium at a concentration of 0.002 mg/L. This data indicates that selenium may be present but below the standard of 0.005 mg/L. Selenium should not be limited in the permit.

Silver has been detected in the ASiMI discharge on four occasions at a concentration of 0.0005 mg/L. Silver was not detected at <0.0001 mg/L (dissolved) concentration in a sample of Silver Lake water collected by Continental in November of 2001. A 10-fold concentration of this sample did not detect silver at a total concentration of <0.001 mg/L. Given that the required reporting value (RRV) is 0.003 mg/L and the standard is 0.009 mg/L, silver should not be limited in the permit.

Thallium has not been sampled for in the ASiMI discharge. Thallium was not detected at <0.0001mg/L (dissolved) concentration in a sample of Silver Lake water collected by Continental in November of 2001. A 10-fold concentration of this sample did not detect thallium at a total concentration of <0.001 mg/L. Given that the required reporting value (RRV) is 0.003 mg/L, thallium should not be limited in the permit.

Response 1 – The Department believes all the metal effluent limits in Table 1 are appropriate due to the reasonable potential for exceedance of water quality standards as is documented in the fact sheet. Comparison of CES wastewater quality to the ASiMI facility is not appropriate since the ASiMI facility cycles the blowdown water less times than proposed by CES, the chemical additives used by ASiMI and CES will likely be different, and the material to be used for the CES cooling towers is unknown at this time and may effect the amount of leaching and therefore the quality of the wastewater discharge. The analysis of the evaporated Silver Lake water also does not account for the chemical reactions that will occur with the cooling tower material and the chemical additives.

After a sufficient amount of effluent monitoring has been conducted, the permittee may request a modification of the permit effluent limits. If the Department agrees that the monitoring

indicates there is no reasonable potential for water quality standards to be exceeded, then the effluent limits can be modified. Alternatively, the Department will re-evaluate the applicability of the effluent limits when the permit is scheduled to be renewed in five years from the date of issuance.

Comment 2 – Page 6, C1, Table 1, Outfall 001, Numeric Effluent Limits - The temperature limit for a “I” Class stream states “no increase in naturally occurring water temperature is allowed which will or is likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife” [ARM 17.30.628(2)(e)]. If the DEQ wishes to base the allowable increase on Class “B-1” standards then the increase should be 1 degree over naturally occurring water temperature [ARM 17.30.623(2)(e)]. This increase should be based on actual water temperatures, stream flows and discharge temperatures and flows. This is the approach used in previous permits (PP&L Corrett and Stillwater East Boulder) and allows for diurnal temperature fluctuations in estimated temperature discharge. The limits in the permit do not reflect the reality of temperature conditions fluctuating from year to year.

Response 2 – The Department agrees that in-stream monitoring is a more accurate method to determine compliance with water quality standards. The permit will be modified to require a temperature limit of no more than a 1° F in-stream increase at the end of the mixing zone in Silver Bow Creek. The increase will be determined using in-stream temperature measurements above the Outfall 001 discharge (CRK-A) and the flow recorded at the USGS gauging station (12323250). The flow measurement used in the calculation should be the recorded measurement closest in time to the time when the in-stream temperature was recorded (the USGS records flows at 15-minute intervals). Due to the anticipated significant fluctuation of daily in-stream temperatures, the in-stream temperature effluent limit will be based on hourly measurements of temperature and flow.

Comment 3 - Page 7, C1, Table 1, Outfall 001, Numeric Effluent Limits, Footnote 2 - The 30-day average instream temperature increase of 1 degree should also be multiplied by a factor of 1.5 to determine the daily maximum allowable increase of 1.5 degrees.

Response 3 – There is no averaging period for the temperature standard in ARM 17.30.623(2)(e). Therefore, the temperature change limit of 1° F will be set as the instantaneous maximum in the permit. There will not be a 30-day average limit for temperature.

Comment 4 – Page 9, D1, Table 4, Outfall 001 and 002, Effluent Monitoring Requirements - The ASiMI data indicates that the following parameters, listed in the table, are not present at concentrations of concern: DO, BOD, COD, ammonia, nitrate+nitrite, antimony, cadmium, iron, lead, nickel, and silver. There is no reason to suspect increases in BOD, COD, ammonia, nitrates or a decrease in DO as no organic compounds are added to the system. ASiMI did experience higher BOD and COD concentrations during start up due to the presence of oils and anti rusting agents in the piping. ASiMI increased their flows and flushed these compounds within the first 6 months of operation. Since that time BOD concentrations have been generally less than detection (<0.006 mg/L). DO, BOD, COD, ammonia and nitrate+nitrite should be removed from the sampling requirements.

Language should be inserted into the permit that the parameters: antimony, cadmium, iron, lead, nickel, and silver would be sampled quarterly for one year and then reviewed and if appropriate removed as sampling parameters.

Response 4 - The Department does not believe that comparison of the CES wastewater quality to the ASiMI facility is appropriate since the ASiMI facility cycles the blowdown water less times than proposed by CES, the chemical additives used by ASiMI and CES will likely be different,

and the material to be used for the CES cooling towers is unknown at this time and may effect the amount of leaching and therefore the quality of the wastewater discharge.

However, the Department believes that the following modification to Table 4 of the permit is appropriate in response to this comment: BOD will be removed from monitoring requirements because the COD parameter will adequately monitor the amount of organics in the effluent.

After a sufficient amount of effluent monitoring has been conducted, the permittee may request a modification of the monitoring requirements. If the Department agrees that the data indicates there is no need to continue monitoring, then the monitoring requirements can be modified. Alternatively, the Department will re-evaluate the applicability of the monitoring requirements when the permit is scheduled to be renewed in five years from the date of issuance.

Comment 5 – Page 9, D1, Table 4, Outfall 001 and 002, Effluent Monitoring Requirements -

The parameters aluminum, barium, beryllium, manganese, mercury, strontium, and thallium have not been sampled at ASiMI or extensively in the Silver Lake make-up water. Language should be inserted into the permit that these parameters would be sampled quarterly for one year and then reviewed and if appropriate removed as sampling parameters.

Response 5 – The Department does not believe that comparison of the CES wastewater quality to the ASiMI facility is appropriate since the ASiMI facility cycles the blowdown water less times than proposed by CES, the chemical additives used by ASiMI and CES will likely be different, and the material to be used for the CES cooling towers is unknown at this time and may effect the amount of leaching and therefore the quality of the wastewater discharge.

However, the Department believes that the following modification to Table 4 of the permit is appropriate in response to this comment. Based on the reasonable potential analysis conducted for Outfall 001 in the fact sheet, those metals that were determined not to have a reasonable potential to exceed water quality standards at Outfall 001 and therefore do not have effluent limits will be removed from the monitoring requirements. Therefore the following metals will be removed from Table 4 for Outfall 001: barium, cadmium, iron, manganese and strontium. In addition, because there are no water quality standards for iron and manganese, both will be removed from the monitoring requirements from Outfall 002. Due to these changes, Table 4 will be divided into two tables to distinguish the monitoring requirements between Outfall 001 and Outfall 002.

After a sufficient amount of effluent monitoring has been conducted, the permittee may request a modification of the monitoring requirements. If the Department agrees that the data indicates there is no need to continue monitoring, then the monitoring requirements can be modified. Alternatively, the Department will re-evaluate the applicability of the monitoring requirements when the permit is scheduled to be renewed in five years from the date of issuance.

Comment 6 – Page 9, D1, Table 4, Outfall 001 and 002, Effluent Monitoring Requirements -

Metals should only be analyzed by the total recoverable method. The total recoverable method will indicate the worse case and is defensible for surface water. Dissolved metals will complex with soil particles and not be of use to determine ground water changes. Continental will agree to split samples with the state, during inspections, to be analyzed for dissolved parameters to compare the ratio of dissolved to total concentrations.

Response 6 – Metals analyses for both total recoverable and dissolved fractions for effluent discharged to Outfall 002 is necessary because Outfall 002 will discharge to both surface waters and ground water. The water quality standards for surface water and ground water are for the total recoverable and dissolved fractions, respectively (except for aluminum which only has

standards for the dissolved fraction in both surface water and ground water). Therefore, to determine if the CES discharge is causing any ground water quality exceedences at the end of the Outfall 002 ground water mixing zone, it is necessary to analyze the dissolved fraction of the discharge. Similarly, to determine if the CES discharge is causing any surface water quality exceedences in Sheep Gulch, it is necessary to analyze the total recoverable fraction of the discharge.

Comment 7 - Page 9, D1, Table 4, Outfall 001 and 002, Effluent Monitoring Requirements - All parameters with a frequency of weekly or monthly should be sampled quarterly. Language should be inserted into the permit that samples should be reviewed after one year to determine if the parameter should be removed from sampling or the frequency reduced.

Response 7 – The monitoring frequencies for discharges to surface water in the permit are consistent with other major industrial dischargers in the region and are considered a minimum based on the characteristics of the effluent. Therefore, the weekly monitoring frequency for total recoverable metals (for both Outfalls 001 and 002) will not be modified.

However, with regard to the monitoring frequencies for discharges to ground water (i.e. the dissolved metals analyses required for Outfall 002), the Department will reduce the monitoring frequency for dissolved metals to quarterly except for aluminum (which has dissolved standards in surface water) and arsenic. A quarterly monitoring frequency is more consistent with other ground water monitoring requirements. The monitoring frequency for dissolved arsenic will remain as monthly due to the uncertainty regarding existing background ground water arsenic concentrations. The more frequent effluent monitoring for dissolved arsenic will be conducted at the same frequency required for the ground water beneath Outfall 002, and will be useful in demonstrating compliance with the arsenic nondegradation requirements.

Comment 8 - Page 9, D1, Table 4, Outfall 001 and 002, Effluent Monitoring Requirements - All parameters should be sampled by the grab method. Composite samples are relevant if the effluent is expected to change dramatically during a 24-hour period. The effluent from a cooling tower will be relatively consistent over time.

Response 8 – Effluent from the cooling towers may be relatively consistent, however, the discharge will contain wastewater from other sources that will not be consistent wastewater sources. According to the permit application approximately 15% of the discharge water will consist of wastewater used for plant/equipment drains and reject water from the reverse osmosis system. Therefore, the permit will maintain its requirement for composite samples.

Comment 9 – Page 10, D1, Table 4, Outfall 001 and 002, Effluent Monitoring Requirements - An additional footnote should be added which states that “if only one of the Outfalls 001 or 002 is in use during the permit cycle the other outfall will be deactivated at Continental’s request.

Response 9 – The Department assumes that the term “deactivate” refers to removing an outfall from the permit. A permittee may remove an outfall at any time by requesting a permit modification. Such a modification does not require additional public comment. There is no need to add the requested language to the permit.

Comment 10 – Page 10, D1, Table 5, Outfall 003, Effluent Monitoring Requirements - The ASiMI data indicates that the following parameters, listed in the table, are not present at concentrations of concern; ammonia, nitrate+nitrite, antimony, cadmium, iron, lead, nickel, and silver. As stated on page 7 of the Fact Sheet the discharge is not expected to impact the underlying ground water. These parameters should be removed from the sampling requirements.

Response 10 – The anticipated lack of impacts to ground water from Outfall 003 are based, partially, on EPA guidelines for domestic wastewater land application discharges. The EPA guidelines include recommended limits for cadmium, iron, lead and nickel, and therefore those parameters shall remain in Table 5. The Department believes it is necessary to monitor the two other metals listed, antimony and silver, to insure the wastewater quality is similar to that predicted in the permit application, particularly during the initial years of discharge when wastewater concentrations may be elevated. Monitoring of ammonia and nitrate+nitrite is necessary to insure that the irrigation rate does not exceed the nutrient uptake capacity of the soil and plants.

In reviewing the monitoring parameters listed in Table 5, the Department determined that the following parameters can be removed from Table 5 because of the absence of ground water standards and the lack of potential impacts to ground water: total residual chlorine, free available chlorine, and oil and grease. These parameters will also be removed as effluent limits in Table 3 for the same rationale. In addition, the monitoring frequency for pH will be changed from daily to weekly.

In reviewing Table 5, the Department noticed that TSS, which has an effluent limit in Table 3, is not included in the monitoring requirements. Monitoring of TSS in the effluent was recommended by CES in a report prepared by Cascade Earth Sciences dated July 2001. Therefore, TSS will be added to the monitoring requirements in Table 5. The monitoring frequency will be monthly.

Comment 11 – Page 10, D1, Table 5, Outfall 003, Effluent Monitoring Requirements - The parameters aluminum, barium, beryllium, manganese, mercury, strontium, and thallium have not been sampled at ASiMI or extensively in the Silver Lake make up water. As stated on page 7 of the Fact Sheet the discharge is not expected to impact the underlying ground water. Language should be inserted into the permit that these parameters should be sampled quarterly for one year and then reviewed and if appropriate removed as sampling parameters.

Response 11 - The anticipated lack of impacts to ground water from Outfall 003 are based, partially, on EPA guidelines for domestic wastewater land application discharges. The EPA guidelines include recommended limits for aluminum, beryllium and manganese, and therefore those parameters shall remain in Table 5. The Department believes it is also necessary to monitor the four other metals listed, barium, mercury, strontium and thallium, to insure the wastewater quality is similar to that predicted in the permit application, particularly during the initial years of discharge when wastewater concentrations may be elevated.

After a sufficient amount of effluent monitoring has been conducted, the permittee may request a modification of the monitoring requirements. If the Department agrees that the data indicates there is no need to continue monitoring, then the monitoring requirements can be modified. Alternatively, the Department will re-evaluate the applicability of the monitoring requirements when the permit is scheduled to be renewed in five years from the date of issuance.

Comment 12 – Page 11 and 12, D2, Table 6, CRK-A (Silver Bow Creek), In-stream Monitoring Requirements - A credible data base exists from the USGS gauging station located approximately 5 miles above the proposed Outfall 001. Data will continue to be collected at this site into the foreseeable future. Continental believes this site is superior to a new location immediately upstream of the proposed discharge because the area up stream for approximately 4 miles will be experiencing reclamation activities which could impact results. Continental will agree to sample for parameters not presently in the database at the USGS gauging station (antimony, barium, beryllium, chromium, mercury, nickel, strontium, and thallium). The EPA has

not considered these parameters as high priority at the site. Language should be inserted into the permit that these parameters should be sampled quarterly for one year and then reviewed and if appropriate removed as sampling parameters. Even after the reclamation is completed through the Ramsey area Continental believes that the present sampling site of the USGS gauging station is the most appropriate.

Response 12 – The Department does not agree that the USGS gauging station is a better monitoring location than immediately upstream of Outfall 001 (CRK-A). As the comment notes, there has been and will continue to be reclamation activities between the USGS station and Outfall 001. Therefore, CRK-A is the best location for an upstream sampling location for Outfall 001. Maintaining accurate and current information on Silver Bow Creek is particularly important because the stream quality may change as reclamation activities continue, which may eventually lead to reclassification of the Creek. If Silver Bow Creek is reclassified in the future, a modification to the effluent limits would likely be necessary. In addition, some of the effluent limits for Outfall 001 are based on in-stream concentrations, therefore it is important to monitor in-stream quality directly above the discharge point to maintain the correct effluent limits in the future.

Comment 13 – Page 11 and 12, D2, Table 6, CRK-A (Silver Bow Creek), In-stream Monitoring Requirements - Nutrient data is available and will continue to be sampled in this stream reach by the consulting firm Land and Water under contract to the DEQ. WET testing is not appropriate at this site due to the reclamation activities up stream as stated in comment 12. Additionally, the data from the USGS upstream monitoring station indicates toxic conditions already exist and the lowest limit possible has been set using that conservative assumption. If Continental wishes to increase their limit, at some time in the future at Outfall 001, site specific data at an appropriate location will be collected and presented to the DEQ.

Response 13 – If the nutrient sampling location used by Land and Water corresponds to the location chosen for CRK-A then the data collected by Land and Water can be used to satisfy the monitoring requirements (CES would be responsible for obtaining the data and including it with the other monitoring data in the discharge monitoring reports). If the location used by Land and Water is not at CRK-A then that data is not applicable for use in meeting the permit monitoring requirements.

Because the existing WET effluent limits allow no toxicity in the discharge (0.3 TU_a), the Department agrees it is not necessary to conduct in-stream WET testing in Silver Bow Creek. Therefore, WET testing will be removed from Table 6. If the permittee wishes to increase the WET effluent limits for Outfall 001 in the future, in-stream WET testing information at CRK-A will likely be needed for the Department to approve that modification request.

Comment 14 – Page 13, D2, Table 7, CRK-B (Sheep Gulch), In-stream Monitoring Requirements - As in the case of Table 4 comment 4, the ASiMI data indicates that the following parameter, listed in the table, are not present at concentrations of concern: DO, ammonia, nitrate+nitrite, antimony, cadmium, iron, lead, nickel, and silver.

Language should be inserted into the permit that the parameters: antimony, cadmium, iron, lead, nickel, and silver would be sampled quarterly for one year and then reviewed and if appropriate removed as sampling parameters.

Response 14 – The Department believes all the monitoring requirements in Table 7 are appropriate due to the uncertainty regarding the chemical and biological changes that may occur between the discharge at Outfall 002 and the in-stream monitoring at CRK-B. Comparison of wastewater quality to the ASiMI facility is not appropriate since the ASiMI facility cycles the blowdown water less times than proposed by CES, the chemical additives used by

ASiMI and CES will likely be different, and the material to be used for the CES cooling towers is unknown at this time and may effect the amount of leaching and therefore the quality of the wastewater discharge.

After a sufficient amount of in-stream monitoring has been conducted, the permittee may request a modification of the monitoring requirements. If the Department agrees that the data indicates there is no need to continue monitoring, then the monitoring requirements can be modified. Alternatively, the Department will re-evaluate the applicability of the monitoring requirements when the permit is scheduled to be renewed in five years from the date of issuance.

Comment 15 – Page 13, D2, Table 7, CRK-B (Sheep Gulch), In-stream Monitoring Requirements - As in the case of Table 4 comment 5 the parameters aluminum, barium, beryllium, manganese, mercury, strontium, and thallium have not been sampled at ASiMI or extensively in the Silver Lake make up water. Language should be inserted into the permit that these parameters should be sampled quarterly for one year and then reviewed and if appropriate removed as sampling parameters.

Response 15 – See response to comment 14.

Comment 16 - Page 13, D2, Table 7, CRK-B (Sheep Gulch), In-stream Monitoring Requirements - As in the case of Table 4 comment 7 all parameters with a frequency of monthly should be sampled quarterly. Language should be inserted into the permit that all samples should be reviewed after one year to determine if the parameter should be removed from sampling or the frequency reduced.

Response 16 – The Department believes that the monthly sampling frequency in Table 7 is appropriate and consistent with other surface water monitoring frequencies.

After a sufficient amount of in-stream monitoring has been conducted, the permittee may request a modification of the monitoring requirements. If the Department agrees that the data indicates there is no need to continue monitoring, then the monitoring requirements can be modified. Alternatively, the Department will re-evaluate the applicability of the monitoring requirements when the permit is scheduled to be renewed in five years from the date of issuance.

Comment 17 - Page 13, D2, Table 7, CRK-B (Sheep Gulch), In-stream Monitoring Requirements - Continental would propose to monitor the flow in Sheep Gulch at CRK-B on a monthly basis. It is not anticipated that the surface flow will fluctuate greatly once equilibrium is established with the ground water system.

Response 17 – The Department believes that frequent flow data is needed in Sheep Gulch (CRK-B) to determine the amount of ground water infiltration between Outfall 002 and CRK-B. That information is necessary to better assess the need for monitoring and effluent limits related to the fraction of the discharge that will impact the ground water beneath Sheep Gulch. The Department does not believe that monthly sampling will be adequate. However, the Department will revise the flow rate monitoring frequency from daily to weekly in the permit, which will provide sufficient flow data.

Comment 18 – Page 14, D2, - Rhodia Inc. owns the property in Sheep Gulch south (upstream) from the confluence of Sheep Gulch and the West Fork of Sheep Gulch for approximately 1,300 feet. Continental will request, from Rhodia, that a flume and sampling point be located on Rhodia property but can not guarantee that a site will be available. Continental would propose that the monitoring site be located at the southern end of the Rhodia property approximately

3,000 feet below the proposed Outfall 002. A map will be submitted showing the location of the sampling site 1 year prior to discharge.

Response 18 – The location of surface water sampling point CRK-B will be modified in the permit. CRK-B will be located approximately 3,000 feet downstream of Outfall 002, and will be outside the Rhodia, Inc. property boundary. The impacts to the perennial section of Sheep Gulch and the need for effluent limits for Outfall 002 will be based on the monitoring conducted at CRK-B.

Comment 19 – Page 14, D3, Table 8, CESMW-1, 2 and 3 (Monitoring for Outfall 002), Ground Water Monitoring Requirements - Antimony has never been detected in any of the ASiMI monitoring wells with a detection limit of <0.003 mg/L. Similarly it has never been detected in the ASiMI discharge. Antimony should be removed as a sampling parameter.

Cadmium, lead, nickel, nitrate+nitrite, and total Kjeldahl nitrogen (ammonia) have been detected in the ASiMI monitoring wells but no increase from up gradient to downgradient is evident. Similarly these parameters are detected at very low concentrations in the ASiMI discharge. These parameters should be removed as sampling parameters.

As in the case of Table 4 comment 5, with the addition of chromium the parameters aluminum, barium, beryllium, manganese, mercury, strontium, and thallium have not been sampled at ASiMI or extensively in the Silver Lake make up water. Language should be inserted into the permit that these parameters should be sampled quarterly for one year and then reviewed and if appropriate removed as sampling parameters.

Response 19 - The Department believes all the monitoring requirements in Table 8 are appropriate due to the uncertainty regarding the chemical and biological reactions that will occur in the vadose and saturated zones below Sheep Gulch that may be different than is occurring under the ASiMI discharge. Comparison of wastewater quality to the ASiMI facility is not appropriate since the ASiMI facility cycles the blowdown water less times than proposed by CES, the chemical additives used by ASiMI and CES will likely be different, and the material to be used for the CES cooling towers is unknown at this time and may effect the amount of leaching and therefore the quality of the wastewater discharge.

Due to the long lag time associated with discharges to ground water and the discontinuous nature of the discharge to Outfall 002, the length of time required before the maximum impacts to ground water are anticipated is unknown. Therefore, the Department does not believe that the permit should contain a minimum time limit for ground water monitoring. After a sufficient amount of ground water monitoring has been conducted, the permittee may request a modification of the monitoring requirements. If the Department agrees that the data indicates there is no need to continue monitoring, then the monitoring requirements can be modified. Alternatively, the Department will re-evaluate the applicability of the monitoring requirements when the permit is scheduled to be renewed in five years from the date of issuance.

Comment 20 – Page 14, D3, Table 8, CESMW-1, 2 and 3 (Monitoring for Outfall 002), Ground Water Monitoring Requirements - As in the case of Table 4 comment 7 all parameters with a frequency of monthly should be sampled quarterly. Language should be inserted into the permit that all samples should be reviewed after one year to determine if the parameter should be removed from sampling or the frequency reduced.

Response 20 – The permit will be modified to reduce the monthly monitoring frequency for all the parameters in Table 8 (except arsenic) to quarterly, which is more consistent with other ground water monitoring requirements. The arsenic monitoring frequency will remain as monthly due to the uncertainty regarding the existing background concentration in the ground water

beneath Outfall 002. The more frequent ground water monitoring will be useful in demonstrating compliance with the arsenic nondegradation requirements.

Due to the long lag time associated with discharges to ground water and the discontinuous nature of the discharge to Outfall 002, the length of time required before the maximum impacts to ground water are anticipated is unknown. Therefore, the Department does not believe that the permit should contain a minimum time limit for ground water monitoring. After a sufficient amount of ground water monitoring has been conducted, the permittee may request a modification of the monitoring requirements. If the Department agrees that the data indicates there is no need to continue monitoring, then the monitoring requirements can be modified. Alternatively, the Department will re-evaluate the applicability of the monitoring requirements when the permit is scheduled to be renewed in five years from the date of issuance.

Comment 21 – Page 15, D3, - The TIFID (Silicon Industrial Park) owns the land for approximately 3,000 feet south (down gradient) of the proposed Outfall 002. Rhodia Inc. owns the land for approximately 1,300 feet north of the confluence of Sheep Gulch with the West Fork of Sheep Gulch. Rhodia Inc also owns the land south of the confluence of the two drainages. Continental would propose placing monitoring well CESMW-2 at the southern boundary of the Rodia property approximately 3,000 feet below Outfall 002. The area below the confluence of the two drainages and upstream of the tailings impoundment is swampy and not ideal for a well location. Continental suggests that the existing EPA monitoring well be sampled as a down gradient well below both the Continental and ASiMI outfalls or the monitoring well CESMW-3 be eliminated.

Response 21 – Due to the land access difficulties, the Outfall 002 monitoring requirements in the permit will be modified. The ground water mixing zone for Outfall 002 will be shortened from 6,000 feet to approximately 3,000 feet. The mixing zone will extend to the southern end of the Rhodia, Inc. property. Due to this modification, monitoring well CESMW-3 is no longer necessary and will be removed from the permit. Well CESMW-2 will be moved to the end of the revised mixing zone and will serve as the compliance monitoring point. The impacts to the ground water and the need for effluent limits for Outfall 002 will be based on the monitoring conducted at CESMW-1 and CESMW-2. Compliance with water quality standards and nondegradation requirements at the end of the mixing zone will not require comparison with ground water monitoring data from the ASiMI facility (as was stated in the fact sheet), the permit and fact sheet will be modified accordingly.

Comment 22 – Page 15, D3, - Continental would propose submitting a map showing the location of the monitoring wells 1 month prior to drilling the wells, at the same time as submittal of the standard operating procedures (see comment 28), and approximately 13 months prior to discharge.

Response 22 – The Department agrees that the submittal of monitoring well locations and other information should be based on when the wells will be constructed rather than based on the effective date of the permit. The permit will be modified to require the permittee to submit the proposed well locations for CESMW-1 and CESMW-2 two months before they are to be constructed so that the Department has an opportunity to review the locations, and confirm the locations are acceptable.

Comment 23 – Page 16, D3, Table 9, CESMW- 4 and 5 (Monitoring for Outfall 003), Ground Water Monitoring Requirements – Given that it is not anticipated that metals will be transported through the soil profile metals should not be required as sampling parameters. To determine if ground water is being impacted the parameters of TDS and SC are more appropriate.

Antimony has never been detected in any of the ASiMI monitoring wells with a detection limit of <0.003 mg/L. Similarly it has never been detected in the ASiMI discharge.

Cadmium, lead, nickel, nitrate+nitrite, and total Kjeldahl nitrogen (ammonia) have been detected in the ASiMI monitoring wells but no increase from up gradient to downgradient is evident.

Similarly these parameters are detected at very low concentrations in the ASiMI discharge. As in the case of Table 4 comment 5, with the addition of chromium the parameters aluminum, barium, beryllium, manganese, mercury, strontium, and thallium have not been sampled at ASiMI or extensively in the Silver Lake make up water. Language should be inserted into the permit that these parameters should be sampled semi-annually for one year and then reviewed and if appropriate removed as sampling parameters.

Response 23 – The anticipated lack of impacts to ground water from Outfall 003 are based, partially, on EPA guidelines for domestic wastewater land application discharges. The EPA guidelines include recommended limits for aluminum, arsenic, beryllium, cadmium, chromium, copper, fluoride, iron, lead, manganese, nickel, selenium and zinc. Therefore those listed parameters shall remain in Table 9. The Department believes it is necessary to monitor the other metals listed in Table 9 to insure the wastewater quality is similar to that predicted in the permit application, particularly during the initial years of discharge when wastewater concentrations may be elevated. Monitoring of ammonia and nitrate+nitrite is necessary to insure that the irrigation rate does not exceed the nutrient uptake capacity of the soil and plants.

Due to the long lag time associated with discharges to ground water and the discontinuous nature of the discharge to Outfall 003, the length of time required before the maximum impacts to ground water are anticipated is unknown. Therefore, the Department does not believe the permit should contain a minimum time limit for ground water monitoring. After a sufficient amount of ground water monitoring has been conducted, the permittee may request a modification of the monitoring requirements. If the Department agrees that the data indicates there is no need to continue monitoring, then the monitoring requirements can be modified. Alternatively, the Department will re-evaluate the applicability of the monitoring requirements when the permit is scheduled to be renewed in five years from the date of issuance.

Comment 24 – Page 16, D3, – The upgradient monitoring well CESMW-4 may have to be located cross gradient of Outfall 003 to remain on TIFID property.

Response 24 – Due to the uncertainty regarding the final location of the spray irrigation areas for Outfall 003, the Department recognizes that the background monitoring well for Outfall 003 (CESMW-4) may not be able to be located directly upgradient of the outfall. A cross gradient well would be acceptable as long as it is representative of the water that is located beneath the final areas chosen for Outfall 003. The permit will be modified accordingly. Note that the names for CESMW-4 and CESMW-5 will be changed to CESMW-3 and CESMW-4, respectively, in the final permit due to the removal of monitoring well CESMW-3 from the monitoring requirements for Outfall 002.

Comment 25 – Page 17, D3, - Continental would propose submitting a map showing the location of the monitoring wells 1 month prior to drilling the wells, at the same time as submittal of the standard operating procedures and approximately 13 months prior to discharge. The location of the wells will depend on the final location of the land application area, which will depend on data collected in the summer of 2003.

Response 25 - The permit will be modified to require that the permittee submit the proposed well locations and standard operating procedures for monitoring to the Department two months prior to construction of the wells. This will allow the Department the opportunity to review the locations and procedures, and confirm that the locations and procedures are acceptable.

Comment 26 – Page 17, D3, – Continental would propose to supply the standard operating procedures for the monitoring wells 12 months prior to discharge. Continental anticipates discharging in June of 2004. Monitoring wells would be installed in May and June of 2003. A contractor for sampling may not be in place prior to April of 2003.

Response 26 – The Department will modify the permit to require submittal of the standard operating procedures two months prior to construction of the wells.

Comment 27 – Page 17, D3, – Continental would propose to supply the construction specifications 1 month prior to drilling the monitoring wells. Continental anticipates discharging in June of 2004. Monitoring wells would be installed in May and June of 2003. A contractor for drilling the wells may not be in place prior to April of 2003.

Response 27 – The permit will be modified to require that the construction specifications are submitted at the same time the locations and standard operating procedures for monitoring are submitted, which is two months prior to construction.

Comment 28 – Page 18, D4, – Continental would propose to supply the standard operating procedures for soil monitoring 6 months prior to discharge. Continental anticipates discharging in June of 2004. Level II soil sampling and the irrigation design will be completed in the summer of 2003. The sampling and design will have bearing on the monitoring procedures.

Response 28 – The permit will be modified as requested.

Comment 29 – Page 19, D5, – For the 48-hour static renewal toxicity test Continental would propose alternating *Ceriodaphnia sp.* and fathead minnows (*Pimephales promelas*) from quarter to quarter. Additionally Continental proposes that language be inserted into the permit to allow a reduction in monitoring frequency after one year and a review of monitoring results.

Response 29 – The requirements for conducting whole effluent toxicity (WET) testing on two species comply with Montana and USEPA Region 8 WET testing procedures. In addition, quarterly testing is a minimal sampling effort. The WET testing procedures and testing frequency will not be modified.

Comment 30 – Barium and strontium are not predicted to be over the applicable standards in any outfall, based on Continentals anticipated effluent quality and the DEQ analysis of the potential to degrade. Barium and strontium should be eliminated from sampling at all sites.

Response 30 – The issues in this comment have been raised and addressed in previous responses (see responses 5 and 11).

Comment 31 – D4, Table 11, Soil-B, (for Outfall 003), Soil Monitoring Requirements, page 18 – Footnotes 2 and 3 do not appear to agree. Please clarify the sampling procedure. Continental would propose that the soil monitoring requirements be agreed upon prior to discharge but after additional soil investigation has taken place which is proposed for the summer of 2003.

Response 31 – Footnote 3 in Table 11 of the permit will be modified as follows: “*Each soil boring analyses will consist of 5 separate composite soil samples and analyses collected from a single boring at one-foot intervals in the upper 5 feet of the soil column.*”

The soil monitoring requirements are based upon the Department’s current knowledge regarding the discharge to Outfall 003. If information collected in the future requires revisions to the monitoring requirements, the permittee may request a modification of the permit (the Department may also modify the permit if it is necessary based on additional information to be collected in the future).

Comment 32 – D4, Table 11, Soil-B, (for Outfall 003), Soil Monitoring Requirements, page 18 - The proposed soil pH monitoring requirement should be removed because the process water will be alkaline and will not add acidity to the soil. In our soil investigations to date, all of our test pits had alkaline soil layers but some layers in the same pits also had acidic soil layers. Because of the presence of the alkaline layers at all locations, we do not believe alkalinity addition to the soil to raise the pH of discrete, naturally acidic soil layers is necessary nor is monitoring the pH of those layers.

The proposed monitoring frequency of the soil cation exchange capacity (CEC) should be changed from monthly to once every five (5) years. The CEC is strongly controlled by soil texture and organic matter content. Land application of Continental's organic-deficient water will not cause a rapid change in the CEC because it will not change the soil texture or organic matter content.

The monitoring frequency of the electrical conductivity of the soil saturation paste extract (EC, sat'd paste) should be changed to semi-annual. This monitoring requirement is necessary to determine if year-to-year site management adjustments are necessary to avoid causing excessively saline soil conditions for plant growth. Land application of Continental's water will not create saline soil conditions in one month.

Comment 33 – D4, page 19 – Continental would proposes to submit the standard operating procedures for soil monitoring 6 months prior to discharge.

Response 33 – The permit will be modified as requested.

FACT SHEET COMMENTS:

Comment 34 – Page 6, D2, – Continental does not agree that the ground water beneath an ephemeral drainage must meet nondegradation requirements. The Legislature passed MCA 75-5-103(10) excluding ephemeral drainages as high quality waters. Waters that are not "High Quality Waters" [ARM 17.30.702(8)] were excluded from review under the nondegradation rules by the passage of MCA 75-5-303(2). Continental does not believe it was the intent of the Legislature to, on the one hand, exclude ephemeral drainages from nondegradation review and to specific water quality standards [ARM 17.30.637(6)], but then on the other hand, include nondegradation requirements in the ground water beneath such drainages.

Response 34 – The Department believes its determination regarding the applicability of the nondegradation rules and laws for Outfall 002 is accurate in the fact sheet.

Comment 35 – Page 7, E2, *Ground Water* – Continental does not agree that the mixing zone would be only 15 feet thick after traveling 6,000 feet based on the existence of a vertical gradient (EIS page 3-51). Continental also disagrees that the horizontal gradient is approximately 0.0068 ft/ft. Continental believes that the information from the EIS on page 3-51 is more appropriate. This data is for the over all site and is more likely to be the average value for the horizontal gradient (0.01 ft/ft). A single value for the hydraulic conductivity of 76 ft/day is also not appropriate given the wide variation in measured values. Continental believes a value of 100 ft/day represents an average range of values. Continental will conduct additional test when wells are completed.

Response 35 – This comment is in regards to the ground water mixing zone below Outfall 002. The standard ground water mixing zone thickness is 15 feet pursuant to ARM 17.30.517(1)(d)(iii)(A). The permittee has not submitted adequate evidence demonstrating that a thicker source specific mixing zone thickness is applicable. The vertical gradient by itself does not demonstrate that the mixing zone will be thicker than 15 feet, additional analysis would need

to be conducted to demonstrate that a thicker mixing zone is applicable. The hydraulic gradient referenced in the fact sheet (0.0068 ft/ft) is the appropriate gradient for the location proposed for the mixing zone as based on the available information, the Department does not believe that a more regional gradient (0.01 ft/ft) is appropriate. The Department believes the hydraulic gradient referenced (76 ft/day) is the most applicable value for the ground water mixing zone below the Sheep Gulch outfall (Outfall 002) because that hydraulic conductivity is based on the only local aquifer tests that were conducted within the sediments located immediately below Sheep Gulch.

Comment 36 – Page 9, E3, - Continental believes that a direct comparison of the two land application sites can be made based on the geologic map of Borduin (1999), page 12, which indicates the areas of land application are in the same geologic map unit (Tertiary sediments). Based on this data Continental's request for a reduction in monitoring parameters and frequency should be granted.

Response 36 – The Department believes that the two land application sites are not similar because the Butte-Silver Bow effluent is domestic wastewater and the water source is different than that proposed by CES. Therefore the monitoring information from Butte-Silver Bow land application area is inadequate to eliminate monitoring requirements from the permit.

Comment 37 – Page 22, F2iii, - The ASiMI facility uses the same raw water and although it cycles the water only 2.2 times, compared to the proposed Silver Bow facility of 10 times, the data can be used to show that only arsenic and possibly copper increase in the furthest down gradient well and in the effluent with increased cycling. Given that the predicted effluent concentration, which is over estimated, meets all the EPA guidelines for land application a reduction in monitoring parameters and frequency should be granted.

Response 37 – See responses to comments 10 and 11.

Comment 38 – 34, H3, - The ASiMI monitoring has demonstrated over 4 years of quarterly and monthly sampling that they have no increase in their effluent or down gradient monitoring wells for the metals: antimony, cadmium, iron, lead, nickel, selenium and silver. The data also indicates no increases of BOD, COD, or nitrates. There has been no reduction of DO and only a minor increase in fluoride. Based on the ASiMI monitoring data no increase in monitoring should occur at the facility.

Response 38 – Based on the response to comment 21, the mixing zone for Outfall 002 will be shortened from 6,000 to 3,000 feet and monitor well CESMW-3 will be removed from the permit requirements. These modifications eliminate the need to compare ASiMI ground water monitoring data to the CES data. Therefore, the fact sheet will be revised to remove the statement that ASiMI ground water monitoring requirements will be increased. ASiMI ground water monitoring requirements may still be modified, but that will be determined when the ASiMI MPDES permit is renewed (the existing ASiMI permit expires on December 31, 2004).

RESPONSE TO CLARK FORK COALITION COMMENTS

Comment 1 – From the fact sheet, it appears that the MPDES permit application is incomplete, and any decision on it is premature. In several places, the fact sheet indicates that little or none of the baseline data necessary to determine whether the discharge will meet standards has been collected. DEQ should not be proposing to issue an MPDES permit before baseline data are collected. Normally, one expects an applicant to submit a permit application after collecting

the necessary baseline. Baseline data are necessary to determine what pollutants have the potential to exceed standards, and the numerical effluent limits necessary to prevent exceedances. These determinations are required by ARM 17.30.1344 and 40 CFR § 122.44. Baseline is also required in order to determine whether any mixing zone is necessary, and if so, whether it will be the “smallest practicable size” and will have a “minimum practicable effect on water uses.” See MCA 75-5-301(4). If a permit application does not have adequate baseline to make these determinations, DEQ should reject it as incomplete. The law does not allow DEQ to authorize a discharge, and then use post-hoc monitoring to determine whether the discharge meets standards.

Response 1 – The Department assumes these comments are related to Outfalls 002 and 003, as there is adequate background data for the receiving water of Outfall 001 (Silver Bow Creek).

The USEPA NPDES application for new sources and new dischargers (Form 2D) does not require the permittee to submit information regarding the background quality of the receiving waters. Therefore, the Department cannot determine a permit application as incomplete due to a lack of background data for the receiving water. Using information submitted by CES (including land use maps, well location maps, ASiMI discharge monitoring reports, numerous technical reports regarding ground water and surface water quality, on-site soil studies, and anticipated effluent concentrations), the fact sheet outlines the reasonable potential analysis conducted by the Department to determine whether permit limits are necessary for specific parameters. Where existing data was inconclusive for such an analysis, the Department has required monitoring to determine compliance with applicable standards. If monitoring indicates that the discharge causes an exceedance of water quality standards, effluent limits will be added to the permit through the re-opener provision in the permit (Part IV Section O.1.) or during the next permit renewal.

Many of the water quality based effluent limits in the permit are based on calculations that used raw water concentrations that were below the laboratory detection limit. Concentrations below the laboratory detection limit were assumed to equal that detection limit for the purposes of estimating effluent quality. Therefore, the Department believes that a reasonable conservative approach was taken in developing effluent limits, which is protective of the environment.

The Department believes that the mixing zones granted in the permit are the smallest practicable size and will have the minimum practicable effect on water uses as is required by 75-5-301(4), MCA. The mixing zone for Outfall 001 is a standard mixing zone length (two stream widths), which the Department believes is the smallest practicable. Because Silver Bow Creek is an impaired stream, there are no current water uses to effect. The ground water mixing zone for Outfall 002 is due to effluent leakage through the bed of Sheep Gulch. Because leakage occurs throughout the length of Sheep Gulch, the mixing zone could conceivably extend several miles to Silver Bow Creek. The permit has set the mixing zone length to approximately 3,000 feet (note that the mixing zone length has been reduced from 6,000 feet as proposed in the draft permit), where it is assumed most of the leakage and impacts to ground water will occur. The Department believes the mixing zone is therefore the smallest practicable. Because there are limited uses of ground water in the vicinity of the mixing zone, the Department believes that there will be no effect on water uses as a result of granting the ground water mixing zone.

Comment 2 – It is not clear from the EIS and fact sheet why CES proposes separate outfalls at Silver Bow Creek and Sheep Gulch, nor is it clear when, and for what reasons, the plant will discharge to one outfall or the other. Are these alternate outfalls for the same waste stream, or do they represent separate waste streams that will operate simultaneously? If the applicant

intends to alternate the same discharge from one outfall to the other for some reason – for instance, to avoid making Sheep Gulch a perennial stream and therefore having to meet B-1 standards – then this reason should be disclosed to the public in the fact sheet and EIS. Moreover, if that is indeed the reason for requesting two discharges, then DEQ should require CES to choose one outfall or the other, and plan to treat its discharge to the necessary standards.

Response 2 - CES has proposed three outfalls to discharge a single wastewater stream from the plant facilities. Multiple outfalls are necessary to meet the applicable water quality standards and to provide operational flexibility for CES. The permit has included temporal limits regarding when certain outfalls can be used. If the permittee operates within those temporal limits the permit cannot require the permittee to determine exactly when and for what reasons the discharge will be alternated between different outfalls.

The Department cannot dictate how many outfalls are requested in a permit application if the wastewater discharges can meet the applicable permit requirements and water quality standards. The applicable regulations do not prohibit a permittee from managing their wastewater discharges to meet the applicable water quality standards. Such management includes rotating discharges between separate outfalls. Proper management of wastewater discharge to meet water quality standards is a primary function of the MPDES permit system.

With regards to the seasonal nature of the discharge to Sheep Gulch (Outfall 002), the fact sheet (Section D.2.) explains that Sheep Gulch (in the vicinity of the discharge) is not considered perennial due to the seasonal nature of the discharge and therefore the applicable water quality standards are different than for the perennial section of Sheep Gulch. There is no attempt to hide that information from the public as the comment suggests.

Comment 3 –The introductory text of the fact sheet should include the following text:
“Federal regulations [40 CFR 122.44(d)(1)] require that WQBEL be established in permits when a discharge has a reasonable potential to cause, or contributes to, an excursion of a water quality standard. This fact sheet discusses background and resulting changes in the receiving water concentrations (RWC), effluent characteristics, and flow conditions used to create the WQBEL.”

Response 3 - The proposed language will be added to Section F.2. of the fact sheet.

Comment 4 – On another issue, the proposed effluent limits for arsenic are computed based on the current state standard of 18 ppb. USEPA has announced it will lower the federal standard to 10 ppb by 2006 at the latest. The permit should base the effluent limits on the 10 ppb standard. Based on the predicted concentration in the effluent, and the fact that a surface water mixing zone is not available for a carcinogen, this will likely require some kind of treatment to meet the arsenic standard.

Response 4 – The effluent limits must be based on current water quality standards. The current arsenic surface water standard in WQB-7 is 18 ppb and the water-quality based effluent limits in the permit must be based on that value. If any WQB-7 water quality standard is changed that would effect effluent limits, the permit may be modified to account for the change under the re-opener provision as is specifically stated in Part IV Section O.1. of the permit.

Comment 5 – Finally, the general assumption that nutrient loading to the Clark Fork watershed is not harmful so long as it does not occur during the summer months may or may not be appropriate. Nutrients can be stored within the aquatic system in a number of ways, including in impoundments such as the Warm Springs Ponds, and therefore any significant increase in overall nutrient input to the system is of potential concern. Although the Ponds appear to be

acting as a nutrient sink at present, the mechanisms behind this are not well understood, and it is not known what level of additional loading – summer or winter – might alter these mechanisms and eliminate the treatment benefits of the Ponds. DEQ should be prepared to re-visit the wintertime nutrient limits in the permit as knowledge improves, and CES should be prepared to provide additional nutrient treatment in the future.

Response 5 – As stated in the fact sheet, the Department believes that nutrient discharges in the non-summer months will not create exceedences of numeric or narrative standards in Silver Bow Creek. If additional monitoring or effluent limits are necessary to meet water quality standards in Silver Bow Creek in the future, the permit may be modified under the re-opener provision (Part IV Section O.1. of the permit).

Comment 6 - The DEIS inappropriately proposes to declare an increase in arsenic levels in receiving waters to be non-significant, and therefore exempt from non-degradation review. (Fact sheet, p. 19) This is unacceptable. The governing regulation, ARM 17.30.715(1)(b), establishes a general rule that discharges of carcinogens are not non-significant unless the concentrations are less than those in receiving waters. More importantly, in 1999 the Montana Supreme Court found, based on this rule, that a discharge of arsenic in concentrations greater than receiving waters implicates Article II, Section 3 and Article IX, Section 1 of the Montana Constitution, and the state cannot exempt such a discharge from non-degradation review without a showing of a compelling state interest. *MEIC v. DEQ*, 296 Mont. 207, 1999 MT 248.

Despite this clear legal direction from the state supreme court, the DEIS proposes, with virtually no discussion at all, to declare the increased arsenic level in the Sheep Gulch aquifer resulting from CES' discharge to be non-significant. Worse, the draft EIS proposes to make this determination before any attempt has been made to quantify the magnitude or duration of the increase. All it says about these parameters is that they are “very difficult to predict.” Even if the supreme court ruling and ARM 17.30.715(1)(b) allow DEQ to declare an arsenic discharge non-significant – which is questionable – how can DEQ make that determination before it knows anything about the level of discharge?

The non-significance finding does not even meet the minimal requirements of the regulation the DEIS cites as the legal basis for it. ARM 17.30.715(3) says that DEQ can make a case-specific determination that a proposed discharge is non-significant, based on “information submitted by the applicant that demonstrates conformance with the guidance found in 75-5-301(5)(c), MCA.” The DEIS does not indicate that CES has supplied *any* data about the predicted concentration or duration of this arsenic discharge – much less explain how DEQ has applied the statutory guidance to support the conclusion that the predicted levels will be non-significant. Still less does the DEIS provide any basis for a showing of a compelling state interest for exempting the discharge from non-degradation review.

Together, the state constitution, the *MEIC* case, the non-degradation statute, and ARM 17.30.715 make it extremely difficult for DEQ to declare an increase in arsenic in receiving waters to be non-significant. Although it is not altogether inconceivable that DEQ could make the required showing in the case of this discharge to the Sheep Gulch aquifer, the DEIS does not even begin to make it. Such a showing will have to be based on water quality data and modeling to predict the level and duration of discharge, as well as the expected increase in the receiving waters. It is hard to see how DEQ can issue a valid MPDES permit without this information. As a starting point, DEQ should use the monitoring data that are presumably available for the ASIMI plant discharge, which flows into to the same aquifer and may give some indication of the amount of increase expected. DEQ should also determine whether the

cumulative quantity of arsenic mobilized by both facilities (CES and ASIMI) in combination is significant, rather than considering each discharge separately.

Response 6 – In preparing the fact sheet, the Department determined that allowing a temporary exceedence of the arsenic nondegradation requirement in the ground water beneath Outfall 002 was acceptable for the following reasons:

1. The potential impacts to existing uses are negligible because of limited ground water use in the area of the discharge and the mixing zone;
2. The discharge and mixing zone are in the TIFID, which restricts development in this area to industrial related activities, and therefore strictly limits the possibility of drinking water wells being drilled in this area;
3. The existing background arsenic ground water data was inconclusive (due to the spatial and temporal limits of the data) to determine whether the estimated CES arsenic discharge concentration would be greater than the background concentration immediately upgradient of Outfall 002; and
4. The predicted increase of arsenic above background concentrations would be temporary.

The temporary exceedence of the nondegradation requirements was predicted based on anticipated chemical reactions in the soils. Existing arsenic in the soil may be liberated by the discharge and will migrate into the ground water. The liberation of existing arsenic from the soil is predicted based on ground water monitoring downgradient of the nearby ASiMI discharge, which shows elevated (above 0.02 mg/L) ground water arsenic concentrations downgradient of that discharge (the ground water concentrations are elevated even though the arsenic concentration in the ASiMI discharge water is relatively low, the discharge has an average concentration of 0.0076 mg/L). The Department anticipated that the ground water arsenic concentration would decrease to background concentrations over time as the existing arsenic in the soil was flushed out.

In considering this comment, the Department has concluded that based on data from continuing ground water monitoring beneath the ASiMI facility, there is some uncertainty whether the ground water arsenic concentrations below the ASiMI discharge will return to background concentrations. The Department believes that the elevated ground water arsenic concentrations below the ASiMI discharge are likely caused by the relatively high arsenic concentrations in the shallow soils of this area. CES has submitted soil data from two test pits in the proposed land application area, which indicates the total arsenic concentration in the top 4 to 5 inches of the soil horizon ranges from 38.2 ppm to 82.3 ppm. Below the first five inches, the maximum total arsenic concentration (to depths of 60 and 65 inches) was 6.7 ppm. The origin of the arsenic is unknown, although it is likely naturally occurring arsenic as the measured concentrations are within the normal range of 1 mg/kg (ppm) to 93 mg/kg for soils found in the United States (Kabata-Pendias, A. and H. Pendias, Trace Elements in Soils and Plants, 1992).

To mitigate the effects of the high arsenic concentrations in the shallow soils, the permit will be modified to require that Outfall 002 be discharged to a trench that will run the entire distance between Outfall 002 and the confluence of Sheep Gulch and West Fork Sheep Gulch (the point where Sheep Gulch becomes a perennial water body due to the discharge from ASiMI). The trench will be dug to a minimum depth of 12 inches. By removing the upper 12 inches, the Department believes that the effluent will leach significantly less arsenic from the soil and the impacts to the ground water will be significantly less than that documented at the ASiMI facility. The permit will require ground water and effluent monitoring to determine if the discharge is causing exceedences of the water quality standards or the nondegradation requirements. The ground water monitoring will be required in upgradient and downgradient wells for one year prior

to initiation of discharge from Outfall 002 to determine accurate background data and to determine discharge-related impacts to ground water beneath the discharge.

The Department does not believe that a cumulative analysis of the ASiMI and CES ground water discharges is necessary due to the similar nature of the discharges. If the arsenic concentration in the ground water beneath the CES discharge is same concentration or less (as is anticipated) than the ground water beneath the ASiMI, then the resulting concentration will remain equal to or less than the measured ground water concentration below the ASiMI discharge.

Comment 7 – Regarding the discharge to ground water, the DEIS states that “Determining background conditions is necessary to determine compliance with nondegradation limits,” and that “[t]he existing ground water quality data . . . is not statistically or spatially adequate to provide sufficient information to determine nondegradation limits.” If the existing baseline is inadequate, the permit should be denied at this time. CES should gather the necessary data and re-submit the application once adequate baseline is collected.

Response 7 – See response to comment 1.

Comment 8 – We also note that the proposed ground water mixing zone is very large, extending over 6,000 feet downgradient, and is up to 1,060 feet wide (fact sheet p. 7). The fact sheet and DEIS do not indicate the basis on which this was determined to be the “smallest practicable size,” as required by MCA § 75-5-301(4)(a), nor how it will have the “smallest practicable effect on water uses,” as required by § 75-5-301(4)(b). The final EIS should include a discussion of what other practicable alternatives – e.g., treatment technologies – were considered to determine whether the mixing zone could be made smaller and its impact on water uses reduced.

Response 8 – See response to comment 1.

Comment 9 - The fact sheet states that DEQ does not intend to set effluent limits to protect the perennial section of Sheep Gulch because existing information is inadequate to determine whether they are necessary (p. 17). Therefore, DEQ intends to approve the discharge, conduct monitoring to see if standards are exceeded, and then impose effluent limits after the fact, if necessary. Once again, this has the permitting process backwards. State and federal water quality laws require effluent limits to be set at levels that will meet standards. They do not allow DEQ to issue the permit first, and calculate standards later. If the baseline is inadequate, and DEQ and CES insist on moving forward with the permitting process despite this uncertainty, the solution is to set conservative effluent limits, and then monitor to see if those limits can be relaxed in the future. The solution is not to set relaxed limits (or no limits) now, and then monitor to see if they need to be tightened up in the future.

Response 9 – The permit does include technology based permit limits for Outfall 002. Because the volume and quality of the wastewater that will actually enter the perennial portion of Sheep Gulch cannot be accurately determined until the facility begins discharging, the permit did not include arbitrary water-quality based effluent limits. However, the permit requires monitoring in Sheep Gulch (monitoring point CRK-B) to protect state waters. If water quality standards are exceeded in Sheep Gulch as a result of the CES discharge, effluent limits will be added to the permit through the re-opener provision (Part IV Section O.1.) or during the next permit renewal.

Comment 10 - DEQ’s assumption that it can avoid the injunction in *Friends of the Wild Swan v. United States* by submitting CES’s MPDES permit to EPA as a TMDL for Silver Bow Creek appears invalid. The Clean Water Act requires TMDLs to set limits on pollutant loads at levels

that will meet in-stream water quality standards. The MPDES permit would not do that even if the allowable discharges were zero, because non-point sources will still cause the creek to far exceed water quality standards for the foreseeable future. Therefore, no MPDES permit for CES can qualify as a valid TMDL.

Response 10: The limits established in the permit for a discharge to Silver Bow Creek are water quality-based effluent limits. According to the court's ruling in *Friends of the Wild Swan v. U.S. EPA*, 130 F.Supp.2d 1184, 1194-95 (1999), water quality-based effluent limits developed in conjunction with the issuance of an MPDES permit are valid TMDLs under the Clean Water Act. As such, the Department has determined that the TMDLs developed for the MPDES permit are the only TMDLs that are necessary for issuing a new permit on a WQLSs in accordance with the court's orders dated September 1, 2000 and November 5, 2000. The remaining TMDLs that are necessary to address all sources of pollution on Silver Bow Creek will be completed according to the EPA's and State's scheduled completion date of 2007.

RESPONSE TO USEPA COMMENTS

Comment 1 – Pollutant limits. The facility falls under the effluent limit guidelines at 40 CFR Part 423. 423.15 states that the limits “shall not exceed the quantity determined by multiplying the flow...times the concentration listed in the following table.” To conform to the guidelines, the permit either will need to limit flow or to express the limits as mass-based loadings. The same requirement would hold true for water quality-based limits since those are derived using a mass balance equation assumption of the discharge flowrate.

Response 1 – The permit will be modified to include the same load limits that were listed in the fact sheet.

Comment 2 – Sheep Gulch. The Fact Sheet lists Sheep Gulch as an ephemeral waterbody. An engineering report for a different facility (relevant page attached) lists Sheep Gulch as an intermittent. The status very well may vary based on geography, but it should be confirmed since there are large implications for the application of water quality-based discharge limits.

Response 2 - Based on on-site observations of Sheep Gulch by CES personnel and DEQ personnel, Sheep Gulch only contains water in response to direct precipitation events or due to snowmelt runoff. In addition, water level data from wells located adjacent to Sheep Gulch indicate that the ground water levels are over 18 feet (MW97-1) and 12 feet (GW-3) below ground surface in June and July, respectively. This indicates that the water table remains below the bottom of Sheep Gulch throughout the year, and therefore Sheep Gulch is an ephemeral stream.

Comment 3 - TMDL. Table 8 on p. 24 of the Fact Sheet lists the TMDL loading analysis. For the effluent concentration in column 2, the table lists the facility's *anticipated* discharge concentration. Instead, the table should list the facility's *permitted* concentration which may be the larger of the two numbers.

Response 3 – Table 8 in the fact sheet will be modified as requested.

